

# Stretching the limits of health interventions in Burkina Faso

**Sally Findley, Ahmed Zayan, Maria Kere, Youssof Kone, and Gaston Sogbo**

*The authors gratefully acknowledge the contributions of the entire staff of Save the Children/Burkina to the development and success of the program described here. Without their efforts, we would have nothing to communicate. We also would like to acknowledge the support for the work from the US Agency for International Development, through its child survival grant to the Burkina program. Finally, we thank David Marsh and Save the Children/US, for their co-operation, enthusiastic support for the project and for the permission to publish the results in this journal.*

*This is an online version of a paper printed in Health Transition Review, v7n1, April 1997.*

Many health programs in developing countries share the common goals of reducing infant and child mortality. But there is no consensus on the most effective way to attain these goals.

After regarding the historical evidence, some contend that improvements in child survival are most strongly associated with a wide range of social and cultural changes, such as changes in attitudes to child rearing, in expectations regarding future support for parents from children, and in women's expectations for themselves and for their children, often stimulated as part of the literacy revolution (Ewbank and Preston 1990; Basu and Basu 1991; Caldwell 1979, 1986). Of all the social factors associated with child mortality reductions, maternal education, specifically literacy, has been singled out as one of the most important. In studies conducted in diverse locations such as Bangladesh, India, Mexico, Nigeria, and Zambia, strong correlations have been found between maternal education and child mortality (Lindenbaum 1990; Jain 1994; LeVine et al. 1994). From the findings of these researchers, public health practitioners have advocated child health programs that are implemented in combination with a range of developmental interventions that will stimulate the kinds of social and cultural change believed to be the key to facilitating changes in health attitudes and behaviour.

While not discounting the effect of social factors such as maternal education, others demonstrate the importance of access to health care services (Omorodion 1993; Caldwell 1994). In Nepal, a key factor associated with health status was the use of modern health services, which in turn was correlated with proximity to a road and knowledge of a health care worker (Niraula 1994). Recent debates about reversals of the health transition in the Soviet Union and newly independent states focus on the deleterious effect of the disintegration of the health system (Barr and Field 1996). Accordingly, some advocate strengthening the availability of primary health care in the areas of high child mortality.

Of course, it is very difficult to isolate the effect of health care interventions, independent of educational or public health interventions. Often it happens that improved primary health care programs are implemented in the context of significant economic and social changes, as in Pebley and Amin's (1991) study of Ludhiana district, India. Even if the program's effect on mortality is assessed

separately for each category of villages (with different health and non-health components), overlaid on these changes are those of the broader societal development, which can additionally and differentially affect program implementation and assessments. Indeed in their study, they find that overall child mortality rates declined at an equal pace across all combinations of program implementation. However, they do note significant differences in gender-specific mortality. They attribute the narrowing of the sex differential in child mortality to the effect of health education on the family's traditional system for allocating health and nutrition resources preferentially to males. Thus, the net effect of the program depends on the interaction with cultural and social values.

The other factor to consider is the sensitivity of health behaviour to socio-economic or community development inputs. When the behaviour is complex or requires the presence of several complementary factors (e.g. money with which to buy medications, visit of the vaccination team, retention of a sequence of instructions for health care), the more complex kinds of behaviour are likely to be adopted in the situations where the appropriate factors exist to facilitate adoption. Although the cultural orientation to the behaviour may be identical across all program zones, the health interventions will not work as well where there are factors which counteract or offset the possibilities generated by the health program. For example, bringing a child for vaccinations when the mobile team visits requires that the team comes on time, that parents are notified of the visit in advance, and that they can free themselves to bring children for the team visit. The more isolated neighbourhoods may not be informed in time, those with poor road access may find it impossible to get to the team on the specified day, or the parents may not be able to interrupt the critical sequence of harvesting activities. On the other hand, if parents can mix their own sugar-salt solution, they can treat their children's diarrhoea whenever it happens, regardless of their distant location, poor roads, or other constraints.

For this reason, when evaluating the effect of health and non-health interventions, it is important to include a range of program types and behavioural changes. If there are differences in the adoption of behaviour associated with specific contextual variations, this will suggest the need to consider how susceptible particular kinds of behaviour are to specific program features that vary at each site.

The program in Burkina Faso offers the possibility of controlling for different combinations of program activities. In this project, developed by Save the Children/US, an integrated child health program was implemented in all villages, and in about two-thirds of them a specified combination of other programs was implemented. Further, the child health promotion project targeted a variety of health behaviour and outcomes, giving the necessary opportunity to assess the sensitivity of particular kinds of behaviour to variations in the program and developmental context.

## **Study area**

The project area on which this paper focuses is the Sapone district of Bazega province, 30 kilometres south of Ouagadougou, the capital of Burkina Faso. This area is typical of the savannah area which constitutes the settled area of the Sahel. The area is dominated by subsistence agriculture, with the major cash crop being cotton. During the rainy season, people raise millet, sorghum, peanuts,

beans, and vegetables. People live in villages, which are characterized by several different neighbourhoods, with the cultivated area extending beyond the village clusters. Despite the proximity to Ouagadougou, the villages are not served by electricity, and few have modern deep wells.

Although a few non-governmental organizations are working with Sapone district villagers, this paper focuses on the project organized by Save the Children/US. The program works with villagers to implement small-scale, low-cost community development projects according to the village's priorities. In all projects, the program's major inputs are to facilitate a discussion of possible improvement activities that the village might undertake, and then, having established the priorities, to train the villagers in the skills needed in accomplishing the activities. Materials used are locally manufactured or purchased by the villagers. Many of the villages have chosen to develop their cotton production, the major cash crop of the area. Other community development activities include village well construction, group guaranteed lending and savings, vegetable gardens and irrigated cereal production, and literacy training in village schools.

Since 1988, health components have been added to the projects in all villages encompassed by the project. The first health component focused on raising child immunization coverage. In 1992 a major child survival program was implemented. More importantly for the present paper, the health components were extended to villages which had not yet undertaken any community development activities. By 1993, the program had been implemented in 26 villages, reaching a population of 25,670, with 5,693 women of childbearing age and 4,859 children under the age of five.

The project adheres to a self-help philosophy. The village, through its extant committee structure, discusses its priorities and undertakes the activities it chooses. Any activity depends on the labour and material contributions of the villagers. The key input of the FDC is training, to enable the villagers to carry out their chosen activities. In the health programs, the project relies on a team of local women who have been trained as health motivators. The motivators conduct educational sessions on a variety of health promotion activities, such as use of simple salt solutions, and cleaning underbrush to reduce mosquito breeding grounds. They extend their activities by training local health committees, local volunteer health workers, and midwives in health promotion activities.

The project also has a strong self-evaluation orientation. Before commencing any health promotion activities, the project started with a village census to establish the situation at the start of the project. This census is updated annually, with regular monthly updates to vital statistics. The monitoring system includes several of the project inputs, making it possible to monitor program activities and outcomes.

### **The health intervention**

The child health promotion project of Sapone targeted several activities associated with improvements in child survival: administration of oral rehydration therapy, immunization of children and women, adoption of improved maternal and child nutritional practices, prenatal consultations and adoption of birth control for birth spacing, and control of malaria. The project

provided no actual medical services, but emphasized the training of local health workers to educate, counsel and refer the villagers. While the local health workers were trained to distribute essential medications, this was a minor element of the program. The project's main contribution was training and supervision of newly trained residents.

The key to the project's success was recruitment and training of people from the district to work as village health motivators. They educate and motivate village health committee members and village health volunteers who in turn educate and mobilize village parents. The village health motivators each are assigned 3-4 villages where they go bi-weekly to conduct educational sessions for villagers, train and mobilize the volunteers, conduct growth monitoring, and distribute medications such as chloroquine to the person in charge of the village drug supply.

In two-thirds of the villages, the health training is complemented by the introduction of self-help development programs, including well construction, village-based credit and savings, gardening and other farming changes, and adult literacy. For each of these programs, the project outreach staff help create a village committee to determine the village needs, to develop a plan for addressing the needs, and then to build the necessary service structure. The village is responsible for all the inputs and labour required for any construction projects, such as digging a well or building a school.

As with the health activities the project staff concentrate on education and training. Because the non-health sector programs are implemented at the request of the village, each village may have a different combination of programs. Table 1 outlines the different combinations found among the 26 villages.

**Table 1**  
**Distribution of villages by program mix**

Program mix	No. villages	Mid-project population	Crude death rate
Health only	5	5905	16.8
Health & literacy	3	2122	16.5
Health & non-education	3	3721	18.8
Health & literacy & 1	6	7731	17.9
Health & literacy & 2	6	4381	17.1
Health & 2 non Lit.	3	2261	17.7

Only five of the 26 villages had only health programs. In six villages health programs were complemented by only one other program. Establishment of literacy programs and village schools is the most common choice for a complementary program, both when only one additional activity is selected by the village and when more than one are selected. In 15 villages (over half of all villages) the program mix includes literacy programs. In most cases, the literacy programs are further complemented by other developmental activities, usually village wells and small-scale credit programs. In only three cases were two complementary programs implemented when literacy was not included.

## Program evaluation

The health programs were implemented for four years (1992-1996), with good baseline data for 1993-1996. Some of the non-health programs pre-date the health interventions, while others do not. The project activities were monitored regularly with on-site supervision and the submission of quarterly reports by staff.

In addition, a locally introduced and managed health information system generated the data needed to evaluate changes in health outcomes. Before implementing any program, the project organizers conducted a complete census and identified all women of childbearing age in the 26 villages. In each village, a specially trained 'registrar' received information from co-villagers regarding all vital events: births, deaths, marriages, migrations and moves. These were recorded in a simple notebook and then verified by the village health motivator with a home visit at the time of her regular bi-weekly visit. Verified events were computerized at the program office in Sapone. Data from February 1994, 1995, and 1996 are used in this paper.

The project was evaluated in 1996 using several different methods. The first set of data was obtained from the project's own monitoring system. This system provided information on vital events, immunizations, pregnancies, and selected indicators for vitamin consumption. The second set of data was obtained from household surveys conducted in 1994 and again in 1996, of approximately 200 randomly selected women age 13-49 years with a child under two years. They were selected in batches of seven from each village, with two batches selected in the larger villages. The surveys were conducted by interviewers trained from among the group of village health motivators and village registrars. The surveys included questions about knowledge and adoption of the child health care practices promoted by the village health motivators.

The third set of data for the evaluation of the project came from qualitative interviews and focus groups conducted in 1996. The focus groups were conducted with the village health volunteers, local health committees, and with a group of village men. The focus group questions, developed with the entire staff of the project, solicited points of view on the most beneficial activities of the project, those most beneficial to family health and to their level of living, the difficulties they encountered in adopting the suggested behaviour, and their suggestions regarding actions or advice for further improvements of the program.

Because of the particular interest in determining the effect of the health interventions with and without the multisectoral complementary activities, the evaluation was structured to allow a comparison of findings in projects with only health programs versus those with multisectoral activities. Focus groups were conducted in villages with and without complementary activities (two sets of groups in each category of village). Focus groups were conducted by moderators trained from among the group of village health motivators. Discussions were held in the Moore<sup>1</sup> language and recorded in French by village health motivators serving as observers. No village health motivator conducted focus groups in any of the villages for which she was responsible.

---

<sup>1</sup>Mossi, Molé, Moshi.

## Findings

As seen in Table 2 there were remarkable reductions in infant and child mortality during the three-year project period. For the baseline, figures refer to February 1994 for the original 18 'early starter' villages where the project was started. For villages added the following year (the late starters), the baseline refers to February 1995. Thus, it is possible to make comparisons between the groups for comparable program durations. For both early and late starters, the changes in infant and child mortality are reported by health and developmental program mix.

**Table 2**  
**Change in infant and child mortality, 1994-1996 by village program mix**

Village category	IMR baseline	IMR final	CMR baseline	CMR final	% decline in IMR all villages
n=18 (1994)	139	70	54	35	50
n=8 (1995)	91	68	69	34	25
n=26	135	69	55	35	47
Villages with 2+ programs					
n=13 (1994)	136	52	50	25	62
n=2 (1995)	120	36	81	18	70
n=15	133	49	53	24	63
Villages with <2 programs					
n=5 (1994)	148	136	68	52	8
n=6 (1995)	49	107	53	40	+118
n=11	85	117	59	24	+37

Despite the short period for observing the effect of the program on mortality, it is clear that this was significant. Infant mortality declined from 139 to 70, a 50 per cent reduction. The child mortality rate (deaths to children under age 5) went from 54 to 35, a 35 per cent reduction. The second set of figures in Table 2 shows that the largest reductions in infant and child mortality occurred for the villages with two or more developmental interventions. In these villages, infant mortality declined from 136 to 49, a drop of 63 per cent. The two villages which were added to the program a year later actually had a slightly higher drop for the shorter observation period (a 70% decline). Child mortality rates also were halved, from 53 to 24. The child mortality decline was comparable in the early and later starting villages.

In contrast, the third set of figures in Table 2 highlights the much smaller reductions in infant and child mortality for the programs implemented in the villages with only one or no developmental activity. In these eleven villages, infant mortality actually rose from 85 to 117. Part of the reason for the increase is the presence of two villages which reported no infant deaths for the baseline year. The absence of deaths was rechecked only in 1996, so it is possible that there might have been some missed deaths, but none were found unreported in 1996. The two villages with no reported deaths were both later starting villages, and if

we look at the figures for the early starters only, we observe a drop of only eight per cent, from 148 to 136. In the eleven villages with only health interventions, child mortality dropped from 59 to 24, a decline of 59 per cent.

If we consider only the contrast for villages which had the full three years of interventions (1993-1996), we eliminate the difficulty of comparing results for varying periods of intervention. These figures are the first ones reported in each panel of Table 2. The infant and child mortality reductions for the 13 villages with multisectoral programs are significantly higher than those observed in the villages with one or no non-health programs. Infant mortality declined by 62 per cent from 136 to 52 in the former villages, a difference which is significant at the .000 level (Chi-Square = 41.4). It declined by only eight per cent in the group with only one or no complementary intervention. This change in infant mortality is not significant (Chi-Square = 0.59). The change in infant mortality was also significantly greater in the former than the latter group (Chi-Square = 28.8). Finally, the 52 per cent reduction in child mortality for the villages with two or more complementary interventions was significant (Chi-Square = 8.62), while the child mortality reduction of 25 per cent for the villages with no or only one developmental intervention was not significant (Chi-Square = 2.2).

While the results cover only a small time period when program effects on mortality are usually not expected to occur, there is nonetheless evidence of a significant reduction in the villages with multisectoral interventions. It would be nice to be able to further disaggregate the study findings by type of developmental intervention, but unfortunately the number of villages involved and the different durations of program implementation do not permit a more detailed breakdown. In the next section of the paper we explore the behavioural and attitudinal changes that accompanied these different mortality reductions.

### **Survey responses on changes in behaviour in all the villages**

Behaviour and attitudinal surveys conducted in the second program year and at the end of the program covered key child health promotion practices, including those related to reduction in diarrhoea, feeding during weaning, participation in growth monitoring, behaviour to avoid high-risk births, and child vaccinations. The surveys show an increase in health promotion behaviour across the entire program area. The following table documents the increase observed in this behaviour, at the start of program implementation and then after three years of operation.

**Table 3**  
**Behavioural and knowledge changes, 1993-1996**

Objectives	Achievements	Before program %	After program %
<i>Reduction in diarrhoea</i>	Knows to give fluids	20	73
	Knows to breastfeed more	15	60
	Knows to give more soft food	6	47
	Uses ORS or SSS	33	92
<i>Supplemental feeding at weaning</i>	Knows to start porridge at 4-6 months	60	80
	Knows to give simple porridge without fat	58	79
	Knows what weaning foods to give	7	96
<i>Participation in growth monitoring</i>	Has a growth chart	75	99
	Had child weighed	30	76
<i>High-risk births and STDs</i>	Knows need for 3+ prenatal consultations	65	88
	Knows to have first consult. in trimester 1	42	82
	Had no prenatal consult. for last pregnancy	72	6
	Women having two or more prenatal consultations	12	68
	Wants to space next birth	69	83
	Uses modern contraceptives	45	48
<i>Vaccinations</i>	Child completely vaccinated	69	89
	Proportion women with 2+ anti-tetanus vacc.	97	98
<i>N</i>		240	210



The surveys show substantial adoption of recommended behaviour. The health promotion practices became almost commonplace among the population served by the programs. The mothers also registered substantial improvements in their understanding of factors promoting child health.

Because of small sample sizes in each village, we were not able to report the change in behaviour separately for each group of villages. However, we did conduct focus groups in each group of villages, and these interviews clearly show a difference in attitudes and behaviour in the two groups of villages.

The mothers clearly knew much more about the appropriate treatment of diarrhoea than they had at the commencement of the program activities. As seen above, the proportions knowing to give fluids, to give soft food, and to breastfeed more increased by about 3-4 times for each practice. At the end of the program activities, over half of the mothers knew these treatments for diarrhoea, compared to less than one in ten at the beginning. The mothers' knowledge is matched by their behaviour. Before the implementation of the health programs, only 33 per cent of the mothers knew to give sugar-salt-solution (SSS) to a child; at the end of the program almost all mothers knew this (92%).

More modest improvements in knowledge were reported for use of supplemental feeding to be given while weaning a child. At the start of the program, only seven per cent knew what weaning foods to give. After three years of nutrition demonstrations and village nutrition education sessions 96 per cent of the women reported knowledge of at least one weaning food. The proportion knowing what type of porridge (without fat) and when to give the porridge rose from 60 to 80 per cent. At the end of the program, 99 per cent of the mothers of two-year-olds reported having a growth chart and 76 per cent reported having their child weighed. This corresponds to program statistics which show a dramatic increase in the number of children weighed on regular village health motivator visits.

In both categories of villages where focus groups were conducted, the men and women were well aware of the changes in health of their children and the contribution from their own activities. Women said the following:

The health advice clarified much for us about how to raise and nourish children. Before we took care of children almost by chance. The educational sessions on diarrhoea have helped us better manage health problems.

Now I know what to do when my child is sick with diarrhoea.

The sessions on diarrhoea have helped us a lot. I had experience myself two times with diarrhoea, when using the packets stopped the diarrhoea.

We now know how to take care of our children with different porridges, because mother's milk is not enough.

The village health committee observed the effect of this on mortality:

We rapidly treat the little illnesses of our children and then we avoid the bigger illnesses and the big expenditures for medications.

We know that diarrhoea is less now. The number of rehydration cases is down, and each diarrhoea lasts a shorter period.

In following their advice, we have changed our hygiene and diet. Now we know these things. Those who follow the advice change; those who do not want to follow them, they don't change.

We think that women have received advice, and this advice helps them improve our children's health. Thanks to the weighing of children and the food demonstrations our children are not so sick. They are better nourished and eat well. This advice has helped us improve our health, so that now certain illnesses do not get worse.

Although improvements in behaviour and reductions in mortality were observed in both categories of village, the view of these improvements differed in the two types of villages. In the villages without complementary developmental interventions, the focus group participants frequently noted the difficulties of participating in the health education sessions or in accomplishing the recommended changes, as the following comments of the village health volunteers illustrate:

Without a deep well in the village, women must leave to search for water instead of participating in an educational activity. Also, illiteracy is a brake on their participation, because many women prefer to take care of their own work rather than participate in meetings.

The focus groups highlighted the importance of the village well on women's participation in health promotion activities. In the villages without a well, this is what they said:

Our principal problem is lack of water. We are tired from going to fetch water. Sometimes we can't even find water. And even for washing it is difficult to find water.

In the villages with a village-dug well, men said the following:

The well has saved women hours of walking and waiting. During the dry season our wives sometimes spent the entire day getting water. Now they can get it here. And so they have time to go to the education sessions.

Vegetable gardening and soil conservation practices also were noted for their effect on health:

The gardening has helped us improve the health of our family. Part of the production we use to fortify sauces, and the rest is sold. Then we have money to purchase medicines when we need them.

There has been a change in everyone's behaviour. Now our eyes are opened. People are more involved in village activities. Thanks to the advice on anti-erosive embankments, there has even been an increase in agricultural production.

Literacy training, including for women, also was seen to be essential to the acceptance of new behaviour. According to the village health committee in one of the villages which did not have a literacy program:

Training given to the village health volunteers is good, because village health agents alone can't take care of all the health problems in the village. But for the village health volunteers to function well, they need to be literate and to have regular refresher courses.

Table 3 also shows the effect of the programs promoting prenatal care, anti-tetanus vaccination, and improved diet for pregnant women. At the start of the program, 65 per cent of the women knew that women need three or more prenatal consultations, and 42 per cent knew that the first consultation should occur in the first trimester. However, only 28 per cent had any prenatal consultations for their last pregnancy, and only 12 per cent of the women had two or more prenatal consultations. Both the knowledge and the actual visits increased significantly during the project period. At the end of the project, the majority of women surveyed (88%) knew that three or more consultations were needed, and 82 per cent knew that the first consultation should occur in the first trimester. For their last pregnancy, 94 per cent reported having made at least one prenatal consultation, and 68 per cent reported making two or more visits for their last pregnancy. At the end of the project 98 per cent of the eligible women had received two or more anti-tetanus vaccinations. Thanks to the information on the benefits of birth spacing from the village health motivators, at the end of the project 83 per cent of the mothers with a child under two wished to delay their next birth, and of these 48 per cent reported using modern contraceptive methods for this purpose.

Again, the health committees were knowledgeable about these changes:

The village health motivator helps us a lot in following our children. Thanks to her, we know about all pregnant women in the village. They accept taking chloroquine during their pregnancy (to avoid serious malarial episodes) and they take the iron recommended.

We have learned how to follow pregnancies, and the changes are due to the discussions. The training is good, because women now understand more, and it's due to the meetings.

The village midwife now is trained on the factors making for a risky pregnancy. We know when the woman must be evacuated.

District health officers corroborated the increase in referrals for care and delivery since the project commenced.

Women appreciate the information they have received about birth spacing. Among the project benefits articulated by the women were:

There are the benefits of birth spacing, which are numerous. Such as rest for women, better growth of children, and better for the first child to stay healthy.

Since the discussions we have learned. Now we space our births.

### **Summary of the focus-group commentaries**

These comments highlight the different processes of acceptance of health messages and behaviour in the two program contexts. In the villages with only health program activities, the villagers wanted to make changes, but they clearly were less able to do so, and they failed to achieve the same kinds of mortality reduction that were obtained in the other villages. Women found it very difficult to find time to attend health education sessions or to carry out some of the simple recommendations. In contrast, in the villages with complementary programs facilitating the accomplishment of basic needs, women had time to go to the educational sessions and learn how to better feed and care for themselves and their children. In addition, some of the developmental interventions positively expanded the resources available for maintaining health: clean water, small amounts of cash to buy food or medicine, vitamin-rich foods to supplement the diet. In this way, the developmental activities were critical facilitators for the adoption of health practices.

The comments clearly reflect the synergism between the health and developmental activities. More importantly, they reflect the villagers' understanding of this synergism and their commitment to continue to promote it.

### **What we have learned**

The program in Burkina Faso demonstrates the efficacy of village-based child survival programs. With fairly limited resources applied over a very short period of time, mothers throughout the project area demonstrated their ability to learn essential child-survival concepts and to apply them in their daily lives. As women and men observed in the focus groups, after learning the new skills, mothers felt competent to handle what were previously serious diarrhoeal incidents. They were glad to learn of steps they could take to protect their children's health, to improve their diet, to avoid malaria, and so on. And they found that they could actually accomplish these steps. Finally, they could see and appreciate the effect these behavioural changes had on their children's survival.

Equally importantly, the program shows the very important multiplier or facilitation effect of complementary non-health interventions. Developmental interventions significantly increase the effect of health interventions, mainly by giving the village women more time and resources to allocate to improving their children's health. In the villages where the health education sessions were not complemented by a variety of activities enabling the villagers to better meet their basic needs, they were less able to attend to the health education messages received. Pressures of time and inadequate financial or food resources limited what these villagers could do for their children and for their own health. They fully understood the dilemma they faced and were eager to undertake well digging and other activities that would enhance their ability to make desired nutritional, behavioural, and health care changes.

This project illustrates the significance of time as a major constraint on behavioural change. Both men and women feel constrained by their heavy work responsibilities. When it comes to a choice between fetching water and listening to the village health motivator, they must choose water. The weaker health outcomes in the villages without complementary developmental activities show

that these repeated choices do inhibit major reductions in child mortality. If planners of health programs want to increase their effectiveness, they should carefully plan their activities to minimize the amount of extra and 'prime' time demanded for participation in the activity.

Within the health intervention itself, it is important to consider the timing of activities from the villager point of view. Whenever possible, health education sessions or demonstrations should be scheduled off the 'prime' working time of the morning and early evening when women are preoccupied with household chores. Complementarities within the program should be fostered whenever possible, as in the Burkina program where the baby weighing became the occasion for food preparation demonstrations. Co-ordination also should be sought among the various providers of health services. In the Sapone district program, for example, immunization coverage increased less than expected because the program could not accurately inform villagers of forthcoming visits by the mobile immunization team and they were unable to co-ordinate these with other events for which the villagers would be gathered anyway.

Consideration also should be given to ways to help men and women restructure their obligations so that more time can be freed to attend sessions and develop new health promotion skills. In the villages with complementary well digging and gardening activities, the activities effectively shifted more work and responsibility to men. The men dug the wells, which in turn enabled their wives to attend health education sessions. Similarly, the men assisted in construction of the vegetable gardens and anti-erosion dikes, which relieved the women's work burden, which normally includes vegetable and peanut cultivation. With these gardens, the women were more certain of producing vegetables, making their time investments more efficient.

To be cost-effective, health programs need to work closely with those promoting economic and infrastructure development, so that the investments in health are not wasted. In an arid area like Burkina Faso, well digging was a high-priority complementary activity for freeing time. The villagers also craved literacy programs, as with these they felt they could better retain the educational messages of the village health motivators. But whatever the essential resource, it is important for the health programs to co-operate with those undertaking developmental interventions so that the basic needs are met and resources are made available for effective participation in the health program.

At a minimum, planners of health programs need to consider the complementary inputs that families require in order to adopt recommended changes. Our experience in Burkina Faso suggests that there is ample desire to improve health. The limits come from the situation that does not easily generate necessary resources. In addition to time, important ingredients for health promotion might include a stable, year-round water supply, expanded availability of vitamin-rich foods, lamps for conducting evening educational sessions, and literacy training for women and men, so they can write down and retain health education messages. Health program staff should co-operate with others so these things can be developed along with the health activities.

It may be that the utility of the developmental interventions goes far beyond their outcomes on time and financial resources. They also may be useful as educational tools. Each program requires the villagers to learn and apply new facts and skills. They have the opportunity to experience the efficacy of applying

new ideas or approaches to solve their problems, reinforcing the already strong desire to learn. This experience is likely to be transferred to health interventions through greater receptivity to the interventions and understanding that application of the recommended changes will prove beneficial.

To achieve the maximum from a health intervention, it is important to stimulate and respond to the very positive attitudes towards health improvement, as was found in Burkina Faso. The health program activities did this with the participatory and empowering approach used. The health activities were introduced as steps that villagers could take to help their children to better lives. Fellow-villagers, with the full support of the village health committee, introduced each step; this made each element seem manageable, and hence more likely to be adopted. Further, the villagers put pressure on each other to adopt these activities. The village health volunteers worked hard to encourage women to attend health education sessions and to help them remember what to do.

Another element in the success of the Burkina program was the fact that villagers were accountable for their actions. Deaths, births, and other vital events were monitored regularly, and villagers gathered at least once a year to discuss their progress in achieving mortality reductions and other health improvements. This made improvements self-reinforcing, an achievement they could mutually applaud. In the villages without complementary developmental interventions, they were hungry for more improvements. In the villages where they had undertaken both health and developmental activities, they had much to applaud each year.

## References

- Barr, D.A. and M.G. Field. 1996. The current state of health care in the former Soviet Union: implications for health care policy and reform. *Journal of the American Public Health Association* 86,3:307-312.
- Basu, A.M. and Kaushik Basu. 1991. Women's economic role and child survival: the case of India. *Health Transition Review* 1,1:83-103.
- Caldwell, J.C. 1979. Education as a factor in mortality decline: an examination of Nigerian data. *Population Studies* 33,3:395-413.
- Caldwell, J.C. 1986. Routes to low mortality in poor countries. *Population and Development Review* 12,2:171-220.
- Caldwell, J.C. 1994. How is greater maternal education translated into lower child mortality? *Health Transition Review* 4,2:224-229.
- Ewbank, D.C. and S.H. Preston. 1990. Personal health behaviour and the decline in infant and child mortality: the United States 1900-1930. Pp. 116-149 in *What We Know about Health Transition: The Cultural, Social, and Behavioural Determinants of Health*, ed. J.C. Caldwell et al. Canberra: Australian National University.
- Jain, Anrudh. 1994. Maternal education and childcare. *Health Transition Review* 4,2:199-206.
- LeVine, R.A., E. Dexter, P. Velasco, S. LeVine, A.R. Joshi, K.W. Stuebing, and F.M. Tapia-Urbe. Maternal literacy and health care in three countries: a preliminary report. *Health Transition Review* 4,2:186-191.
- Lindenbaum, S. 1990. Maternal education and child care processes in Bangladesh: the health and hygiene of the middle classes. Pp. 425-440 in *What We Know about Health Transition: The Cultural, Social, and Behavioural Determinants of Health*, ed. J.C. Caldwell et al. Canberra: Australian National University.
- Niraula, B.B. 1994. Use of health services in Hill villages of Central Nepal. *Health Transition Review* 4,2: 151-166.
- Omorodion, F.I. 1993. The socio-cultural context of health behaviour among Esan communities, Edo State, Nigeria. *Health Transition Review* 3,2:125-136.
- Pebley, A.R. and S. Amin. 1991. The impact of a public health intervention on sex differentials in childhood mortality in rural Punjab, India. *Health Transition Review* 1,2:143-170.